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ABSTRACT

On the basis of a comprehensive best-evidence synthesis of the literature on the effects of multigrade and multi-age classes, Veenman (1995) concluded that there were no significant differences between multigrade and single-grade classes in cognitive or achievement effects. Subsequently, Mason and Burns (1996) challenged Veenman's conclusion, claiming that multigrade classes have at least a small negative effect on achievement, as well as having potential negative effects on teacher motivation. Multigrade classes are used extensively within Victorian primary schools, sometimes by choice but at other times as a result of the combined pressures from staff-student ratios and enrollment numbers at particular grade levels. The issue of their contribution to effective learning is thus a critical, practical one, as well as an interesting research question. Analysis of data from the Victorian Quality Schools Project, a large, comprehensive, three-year, longitudinal study of school and teacher effectiveness, revealed some significant negative effects on achievement associated with multigrade classes and some non-significant effects. Results differed between data collection occasions (1993 and 1994) and between subject areas: literacy and numeracy. In order to illuminate the processes at work, the issue of multigrade classes became one of the research questions investigated in the qualitative phase of the project in 1995. Principal and teacher perceptions of the level of learning difficulty in multigrade classes (for all students and for particular subgroups) were sought through interviews, together with information about school policy on multigrade classes and the processes of allocating students to such classes. The results indicate the directions that could be taken to maximize effectiveness of teaching and learning in multigrade classes, as well as directions for further empirical investigation of the effects of multigrade classes on students' learning outcomes. An interview schedule and 15 tables of data are attached. (Contains 25 references.) (Author/RS)

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98 Abstracts

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Analysis of data from the Victorian Quality Schools Project, a large, comprehensive, three-year, longitudinal study of school and teacher effectiveness, revealed some significant negative effects on achievement associated with multigrade classes and some non-significant effects. Results differed between data collection occasions (1993 and 1994) and between subject areas: literacy and numeracy. In order to illuminate the processes at work, the issue of multigrade classes became one of the research questions investigated in the qualitative phase of the Project in 1995. Principal and teacher perceptions of the level of learning difficulty in multigrade classes (for all students and for particular subgroups) were sought through interviews, together with information about school policy on multigrade classes and the processes of allocating students to such classes. The results indicate the directions that could be taken to maximise effectiveness of teaching and learning in multigrade classes, as well as directions for further empirical investigation of the effects of multigrade classes on students' learning outcomes.

Introduction

Any indication that one is involved in an investigation concerning multigrade classes arouses intense interest among parents, even grandparents, of pre-schoolers and children of primary school age, at least in suburban Melbourne. Questions and comments abound. The matter is one of much significance and practical importance to them. It is also of considerable professional interest to educators and of theoretical as well as professional interest to educational researchers. For parents, the critical issue is whether the multigrade classroom will provide the kind of positive, satisfying and productive social and learning experience they want for their child in school. For teachers and school leaders, there are multiple issues: whether enrolment distributions necessitate multigrade classes; the nature of parental, teacher and school leader attitudes to multigrade classes; how best to organise and teach such classes in order to maximise student learning progress and social development. For researchers, the major focus for many years has been the question of whether student achievement differs in multigrade and single grade classes.

The multigrade class structure is known by various names in different

countries; these include 'composite' or 'combination' classes, 'double' classes, 'split' classes, 'mixed-age' classes and 'vertically-grouped' classes (Veenman, 1995). It is defined as a class in which students of two or more adjacent grade levels are taught in the one classroom by the one teacher for most if not all of the day Such multigrade classes are embedded within the traditional graded system: students retain their grade level labels and are promoted through the school with their grade level cohort (Mason & Burns, 1996; Veenman, 1995). For Mason & Burns and for Veenman, the definition also implies that grade level curriculum and achievement expectations will be retained.

Both Veenman (1995) and Mason and Burns (1996) distinguish between the multigrade class and two other structures: the multi-age class and the non-graded school. The latter two structures have an individualised, developmental focus, manifest in a continuous progress rather than lock-step, graded curriculum for class groups of students varying in age. Student groups remain with the same teacher for two or more years. Both researchers view the multigrade class structure as arising from administrative and economic necessity (unequal grade level enrolment numbers, together with fixed staff:student ratios), in contrast to the multi-age grouping, which is seen to result from a deliberate decision based on a particular pedagogical and philosophical approach.

The existence of multigrade classes in Victorian primary schools is now a commonplace; although some decades ago they might have been found mainly in smaller, country schools and traditional rural schools, they now exist in many if not most urban schools. This development is not unusual. Evidence exists of multigrade classes in a high proportion of primary schools in other Australian states, as well as in other countries, such as England and Wales, Canada, Germany, Switzerland, the Netherlands, New Zealand, and the United States (Veenman, 1995).

Student achievement in multigrade and single-grade classes

In recent years some significant studies have been published which systematise and evaluate the research on the effects of multigrade classes on student achievement, as well as ones which investigate the processes that contribute to these effects. Veenman's (1995) best-evidence synthesis of research concerning the cognitive and non-cognitive effects of multigrade and multi-age classes was a very thorough and well-documented meta-analysis and description of a large number of studies (45 of which were concerned with multigrade classes), drawn from a wide range of countries and nations across the world, both developed and developing.

Veenman found that there were no consistent differences in student achievement between multigrade and single-grade classes. The overall median effect size for cognitive outcomes was 0.00, while the overall median effect size for affective outcomes was +0.10. On the basis of his findings, Veenman drew the conclusion that

> *...parents, teachers, and administrators need not worry about the academic progress or social-emotional adjustment of students in multigrade or multi-age classes. These classes are simply no worse, and simply no better, than single grade or single-age classes.*
>
> (Veenman, 1995:367)

Four factors were proposed by Veenman to help explain the finding of no difference in student achievement between multigrade and single-grade classes.

- Grouping alone is unlikely to have an effect; learning is more dependent on the quality of teaching than on organisational structure.
- Bias in selecting more capable students into multigrade classes, if it occurs, would deplete the proportion of those students in single-grade classes, producing non-equivalent samples for comparison.
- Teachers of multigrade classes are inadequately prepared for teaching such classes and do not have available suitable materials for their teaching.
- Multigrade teaching is demanding and leaves teachers with little energy to pursue potentially more effective grouping strategies in their teaching, resulting in the use of the same practices as in single-grade classes.

The quality of the research reviewed by Veenman was not consistently strong and the justification for inclusion of some of the studies in his analysis is doubtful. In some cases the independent variable (type of class structure) appeared to be confounded with another variable, making it impossible to rule out a rival hypothesis when interpreting the results. For example, in the study by Dordendorf (1983, cited in Veenman, 1995), two multigrade classes in a small, rural school in Nebraska were compared with five single-grade classes in an urban school, thus confounding class structure with type of school, location and probably socioeconomic status. Other variables potentially confounded with class structure in Veenman's data base were teacher quality and experience, student ability and intelligence, student maturity, school size, school resources and nature of school (campus laboratory/non-laboratory school; Seventh Day Adventist/public schools; Escuela Nueva/traditional school).

In addition, some studies were of schools in such radically different contexts that their inclusion in the analysis could do nothing but produce noise in the system. The studies by Jarousse and Mingat (1991, 1992, cited in Veenman, 1995) were of

schools in two developing African countries, where class size ranged up to 150. Veenman (1996) later acknowledged that effects found in such studies might be the result of differences in the educational systems of developing as opposed to developed countries. He thus omitted such studies from his re-analysis, together with some of the weaker studies. The re-analysis did not lead him to alter his original conclusion.

Mason and Burns (1996), having themselves reviewed the research into the differential effectiveness of multigrade and single-grade classes, did not dispute Veenman's finding of non-significant differences in achievement and slightly more positive though non-significant social-emotional effects of multigrade classes. However, their conclusion was different; they claimed that multigrade classes have at least a small negative effect.

They argued that multigrade classes generally have better student and perhaps better teachers allocated to them (a possibility that Veenman acknowledged in his first paper (Veenman, 1995: 327-8; 371), but subsequently claimed was not yet established (Veenman, 1996:335)). These factors should produce more positive outcomes for multigrade classes, both because multigrade classes would be systematically advantaged and also because single-grade classes would consequently be systematically deprived of better students and teachers. Why then are there multigrade classes found to have similar or slightly negative effects when compared to single-grade classes?

Mason and Burns (1996) asserted that the reason must lie in the more complex and difficult teaching situation that multigrade classes present, for example in terms of greater workload, need for more preparation time and better management skills (factors acknowledged by

Veenman, 1995, 1996), together with a consequent increase in teacher stress.

> *Teachers are therefore faced with delivering two different curricula to students of twice the age range in the same amount of time - factors which make these two structures radically different. Our question is, Why wouldn't we expect multigrade classes to be more difficult for teachers and result in different and less effective instructional practices?*
>
> (Mason & Burns, 1996:313)

In their view, that lower quality, less effective teaching is characterised by less instruction time per grade level group, less time to assist individual students and meet their needs, and reduced curriculum coverage, especially in areas beyond the basic skills.

Mason and Burns argued that the effects of lower quality instruction in multigrade classes are off-set by the better students and teachers allocated to them, resulting in no significant achievement differences between multigrade and single grade classes. They also argued that instead of eliminating the potential negative effects of multigrade classes on student achievement, the assignment of better students and teachers to these classes actually *masks* these effects, because it diminishes the quality of students and teachers in single-grade classes in the same school. The lower achievement outcomes of the disadvantaged single-grade classes are the ones with which multigrade outcomes are compared.

The Mason and Burns case rests to a large extent on the question of whether there is a student and teacher selection bias in favour of multigrade classes. It is somewhat ironic that in a study of Californian multigrade classes conducted by Mason and Burns (1995) there is evidence that major administrative constraints prevent many principals from purposeful placement of students in multigrade classes.

Understanding the processes

The debate between Mason and Burns and Veenman indicates the importance of understanding the processes that operate in the creation and implementation of the multigrade classroom. While well-planned and soundly conducted meta-analysis is capable of providing useful information about the average effect of an independent variable across a body of research, it might not be particularly helpful in giving insight into why those effects have occurred or not occurred, nor in explaining the processes involved in creating them.

Three areas of investigation would help provide such insight and understanding: the formation of multigrade classes, teaching practices within them, and attitudes to them held by parents, teachers and school leaders.

Multigrade class formation

Key issues concerning the formation of multigrade classes are the following.

- Selection of students: Some studies reviewed by Veenman (1995) and Mason and Burns (1996) gave evidence of the purposeful allocation of students on the basis of ability, work habits and behaviour. In studies of the views of principals and multigrade teachers, Mason and his colleagues (Mason and Doepner, 1998; Mason and Burns (1995) found that administrative constraints mostly prevented them from selectively assigning students to multigrade classes in spite of their preference to do so.
- Selection of teachers: Both Veenman (1995) and Mason and Burns(1996) cited

evidence of purposeful selection of good teachers for multigrade classes, although the evidence is more sketchy than that for student selection. Again, administrative constraints were reported by teachers to have had significant effects on selective teacher assignments.

- Class size: Veenman (1995) claimed that little is known about optimum multigrade class size, though he included in his review Canadian and United States studies supporting the need for limited class size and Swedish studies (Marklund, 1962, 1969, cited in Veenman, 1995) which found a significant effect on achievement across six subjects when class size exceeded 25. Little is known about the effects of an uneven distribution of numbers to the upper and lower grade levels in the class (Mason & Burns, 1996).
- Grade level combinations: There is great variation in the grade combinations that occur in multigrade classes. Veenman (1996) found there was a significant amount of variance in effects found for grade level, with the initial positive effect decreasing as grade level increased.
- Number of years in multigrade classes: Veenman (1996) found very slight negative effects (-0.02) for students in multigrade classes for one, four and six years, though not for two years. However, the questionable assumptions underlying the analysis make it difficult to place much reliance on the finding.

Teaching practices in multigrade classes

The quality of teaching and the nature of teaching strategies employed in multigrade classes are critical issues. The evidence is strong that it is at the teacher/class level that schools have a significant impact on student achievement (Hill & Rowe, 1996, 1998; Scheerens & Bosker, 1997). While there is agreement in the literature that greater demands are placed on teachers in multigrade as opposed to single-grade teaching (Veenman, 1995; Veenman, 1996; Veenman & Raemaekers, 1995; Mason & Burns, 1995; 1996; Mason & Doepner, 1998), there is not agreement about whether this affects the quality of teaching. More observational studies which show how teachers cope with the challenges and complexities of multigrade teaching are clearly desirable (Mason & Burn, 1995; Mason & Good, 1996).

Unfortunately, in most studies of multigrade classes the teaching strategies used are not described and as a result are poorly understood. On the basis of the research he reviewed, Veenman (1995) concluded that

- the most frequently used approach is to teach the two grade groups separately, with one receiving instruction while the other undertakes individual seatwork;
- consequently there is less time for direct instruction and lower time-on-task for students, both important variables in student achievement (Scheerens & Bosker, 1997);

- there is little peer tutoring or ability-based group work across grade levels to help meet individual needs;
- teachers lack relevant training, appropriate resource materials, time for individual attention and remediation, and must cope with parental concerns about effects of multigrade placement.

In order to improve teaching in multigrade classes, Veenman established a study of the long-term effects of a staff development program for multigrade teachers (Veenman & Raemaekers, 1995). Given his review findings and the concerns underlying his staff development program, it is a little surprising that Veenman (1996) failed to endorse the concept of less effective instruction in multigrade classes.

Attitudes to multigrade classes

There is widespread agreement in the literature that negative attitudes to and perceptions of multigrade classes prevail. In general teachers are said to prefer single grades because multigrade classes mean more planning, preparation, organisation and work, catering for a wider range of abilities and maturity, less time for meeting individual student needs and for remediation, less time for reflection on teaching, lack of relevant professional training, and less satisfaction with their work (Veenman, 1995; 1996; Mason & Burns, 1995; 1996). Some positive perceptions have been identified. These usually concern students' social skill development, opportunities for the enhancement of learning by the lower grade level group through exposure to upper grade level work, reinforcement of earlier learning for the upper grade level students, and opportunities for children to learn through peer tutoring (Veenman, 1995; Mason & Burns, 1995).

Parent perceptions are also reported to be negative in general (Veenman, 1995), though more so in urban as opposed to rural communities. The chief parental concern is said to be about level of student achievement. One of the reasons principals prefer to have single grades is the degree of parental concern about multigrade classes and the time and energy taken in dealing with those concerns (Mason & Good, 1998).

While principals' attitudes have also been reported to be negative in general, Mason and Good (1998) found principals to be not as strongly opposed to multigrade classes as teachers. Given their role in supporting system policy and dealing with the reality of student numbers, principals' actual perceptions might have been more negative than those they expressed. The chief disadvantages perceived by principals were the necessity for teachers to prepare two curricula, the strength of parental concerns and the negative attitude of teachers. The advantages mentioned emphasised administrative ease in coping with student numbers, but also included comment about social skill development and learning from peers.

Combining quantitative and qualitative approaches to research

Both quantitative and qualitative approaches have been used in the research into multigrade classes and their effects, however the combination of these two approaches within the one study is not common. The cyclical or simultaneous use of quantitative and qualitative methodologies leads to richer information, well suited to the practical needs of those wanting to increase school effectiveness. In their discussion of school leadership effects on school outcomes, Hallinger and Heck (1996:36) advocated mixed-method, two-stage studies, in which

> *...the researcher engages the basic question of administrator-effects issues at a broad level of study through quantitative analysis and then focuses on specific issues through more flexible, qualitative methods ... We see this as a potentially fruitful means of uncovering the more subtle processes that underlie expertise in leadership behavior.*

In addition to the validity and reliability of quantitative results, the sophisticated analytic tools that can be applied to the data, the inferences that can be drawn soundly from them, and the

explanations that can be proposed and tested, there are the benefits that qualitative data offer. Good qualitative data are

> *a source of well-grounded, rich descriptions and explanations of processes...more likely to lead to serendipitous findings and to new integrations; they help researchers get beyond initial conceptions and to generate or revise conceptual frameworks.*
>
> *(Miles & Huberman, 1994:1)*

One approach informs the other, with many benefits from the resultant synergy. The present study reports the findings relating to multigrade classes in a mixed-method, two-stage study of school and teacher effectiveness.

The Victorian Quality Schools Project

Two research questions provided the focus for the Victorian Quality Schools Project (VQSP), a large research and development project undertaken in Victoria from 1992 to 1995.

> 1. What are the characteristics of schools in which students make rapid and sustained progress in Literacy (English) and Mathematics, after adjusting for their intake factors and initial levels of achievement?

2. What are the characteristics of schools in which there are positive student attitudes and behaviours, positive perceptions by teachers of their work environment, and high levels of parent participation and satisfaction with their child's schooling?

Details of the longitudinal quantitative study and its results may be found in Hill, Holmes-Smith and Rowe, 1993; Hill and Rowe, 1996, 1998; Hill, Rowe, Holmes-Smith and Russell, 1996; Rowe, Hill and Holmes-Smith, 1994; Rowe, and Hill and Holmes-Smith, 1995.

The study was based on a two-stage stratified probability sample of schools in the three educational sectors in Victoria: government, independent and Catholic. Schools were randomly selected at the first stage with probability proportional to their enrolment size; at the second stage, the entire cohorts of students in grades K, 2, 4, 7 and 9 in each of the selected schools were included in the sample. Repeated measures were obtained on these five year-level cohorts over a three-year period, resulting in student data for each of the compulsory years of schooling. In the first year of the study, useable data were obtained from 90 (including 59 primary schools) of the 96 schools that had initially agreed to participate, with an achieved sample comprising 13,909 students and 931 teachers. A student sample attrition rate of about 10 per cent occurred between 1992 and 1993, with a subsequent further loss between 1993 and 1994 of 8.5 per cent.

The full data base for the project is extensive; variables measured include students' achievement and value-added progress in *Literacy* and *Mathematics*, home background characteristics, student behaviour, student attitudes and opinions, classroom organisation, teacher participation in professional development, parent opinion, teacher affect and perceptions of the work environment, and (in 1993 and 1994) aspects of leadership. The results obtained from statistical analysis of the quantitative data enabled some generalised models of teacher and school effectiveness to be developed.

A qualitative, follow-up case study was undertaken of selected VQSP schools in order to 'validate' several aspects of the generalised models concerning teacher effects on student learning, attitudes and behaviour, and leadership effects on teacher attitudes, perceptions and effectiveness, as well as to illuminate the processes that might be in operation. Because the quantitative study had produced an interesting and puzzling result in relation to student achievement in multigrade classes, this became one of the aspects pursued in the qualitative study. The two relevant research questions were:

1. Does class composition based on more than one Year level have a

negative effect on student progress in English and Mathematics?

2. Does differentiated teaching reduce the negative effect on student progress in English and Mathematics of belonging to a class composed of students at more than one Year level?

The intention was to explore teacher and school leader understandings and experience of multigrade classes, to see whether potential explanations might emerge, which could then be tested in subsequent quantitative research.

A sample of six primary schools was selected from among those primary schools which had participated in the VQSP. The qualitative study was confined to primary schools for two reasons: first, some of the most interesting and important findings of the VQSP related to the primary school and, secondly, time/cost demands of the case study approach precluded the investigation of a sample large enough to include both primary and secondary schools.

Selection of the six schools was based on schools' mean value-added learning progress scores in English and Mathematics for the years 1992 to 1993 and 1993 to 1994. Two schools were selected which had consistently high mean achievement scores, two with consistently low mean scores, and one with consistently middle-level mean scores. The Case Study Coordinator and Fieldworkers were blind to the previous performance of the schools. The sample comprised schools from two systems (Government and Catholic), from a range of locations (urban, outer urban and semi-rural), and schools ranging in size from small

(125 children, 8 staff) to large (525 children, 27 staff).

In each school four school leaders (Principal, Assistant Principal, and the two staff members holding the next most senior positions) and four teachers (teachers of the Year 3 and Year 5 classes that formed the student sample) were interviewed. Semi-structured interview schedules included questions relating to the three main aspects of multigrade and single grade classes: policy and practice regarding multigrade classes and their composition; perceptions of the relative ease or difficulty of student learning in multigrade classes; teaching/learning strategies used in multigrade classes. Relevant questions from the interview schedule are contained in Appendix 1.

Interview responses were transcribed (not verbatim) from the tape-recordings and, following the methodology of Miles and Hubermann (1994), were used to establish within-site matrices relating to each research question and subsequently across-site matrices.

Results

The quantitative study

A multivariate multilevel model of student progress in *Literacy* (adjusted for grade level and prior achievement) was developed, based on the 1992-1993 data. It revealed among other things a strong, direct negative effect of being in a multigrade class. The standardised coefficient for *Multigrade Class* in 1993 was -0.271, statistically significant beyond the $p<.05$ level by univariate two-tailed test. In *Mathematics* the effect, although negative, was not significant. In contrast to the 1993 results, the effect of *Multigrade Class* on students' learning progress in 1994 was not significant, though again still negative. Detailed information about the intricate and interesting multilevel multivariate modelling in which these results are embedded may be found in Hill and Rowe (1998).

Why was the effect so short-lived or, possibly, so unstable? The suggested explanation given was that

> *...extended discussions were held with all participating schools following the finding of a negative effect at the end of 1993 and that as a result, schools closely examined teaching practices in multigrade classes with a view to identifying ways in which they ... had become less effective than single-Grade classes.*
>
> (Hill & Rowe, 1998:326)

It was also pointed out that the 1994 results were more in line with recent research literature, such as the results of the meta-analysis reported by Veenman (1995).

For schools which have to establish multigrade classes, it is not sufficient to know whether or not research results in general show a significant or non-significant negative effect on learning progress. As indicated earlier, many teachers prefer not to teach multigrade classes and in general parents do not wish to have their children taught in multigrade classes. Regardless of whether these preferences are justified in terms of research results about student learning, schools experience the pressures arising from them. Schools participating in the *VQSP* needed to understand the explanation for the short-lived or unstable effect of multigrade classrooms on student learning progress found in the *VQSP* data. The case studies offered the opportunity to explore school perceptions and understandings.

The qualitative study

In contrast to the sophisticated statistical analyses on which the results of the

quantitative phase of the VQSP are based, the qualitative results are based on the conceptual analysis of the perceptions, preferences, opinions and knowledge communicated by individuals during case study interviews. The results are expressed in the form of category content, frequencies and percentages. It is noted that the results relating to specific issues were at times based on a relatively limited sample and on perceptions rather than observations of actual practice, since the purpose of this phase of the study was to develop potential understandings and explanations of processes which could be tested quantitatively at a future time. The results are not necessarily representative of Victorian schools.

Policy and practice regarding multigrade classes and their composition

Two of the six schools had no multigrade classes, a third had only one; in one of these schools the policy opposing multigrade classes was explicit while in the other two, although generally operative and understood, it was less explicit. Necessity of numbers compelled the two smallest schools to have many multigrade classes, a situation which was generally accepted by leaders, teachers and parents. In the sixth school, one of the largest, there were several multigrade classes, though opinion about their desirability was mixed. The decision-making process regarding whether or not to have multigrade classes was described consistently by teachers and leaders within each school; it involved consultation between those two groups in particular.

1. Reasons for creating or avoiding multigrade classes

Reasons volunteered by interviewees for their schools having or not having multigrade classes fell into four categories. The results are presented in Table 1 (Appendix 2).

- Teachers' perceptions: Attitudes and preferences; lack of knowledge/competence; and difficulty of work (33.3 per cent of comments):

    - teachers are very disenchanted with them (1:7)

    - teachers believe it's harder work, prefer not to have them (1:3)

    - teachers feel the wider span of children means more work (6:1)

    - *'City teachers don't want them, they don't like them, they don't know anything about them, they've never taught them, they're not committed to them, they grizzle constantly about the spread of age differences ... Basically I think it's about teaching competence. I would shy off them. It then has an effect on morale; it then has an effect on your team players and it has a trickle-down effect. It starts to affect a whole lot of other*

things.' (1:1)

- Parents' perceptions: Attitudes and preferences; rural/city context; social factors learning progress (32.4 per cent of comments):

  - it's perceived as the short straw for both teachers and parents (3:1)

  - parents generally don't think they're a good idea, push for straight grades (2:8)

  - city parents' perception is against them, different in the country (1:1)

  - parents want their children to be able to choose friends from a wide range (6:1)

  - parents tend to feel children at the older level won't be extended or benefit (6:2)

- Enrolment numbers: Necessity based on numbers (27.6 per cent of comments):

  - not a policy, just a necessity because of numbers (2:6)

  - no written policy, but an unwritten one governed by numbers (5:2)

  - we work on the basis of the number of children at each year level, the number of teachers - options are having smaller grades and no specialist teachers or the reverse (5:7)

- Student progress: Effects on teaching and learning (6.2 per cent of comments):

- teachers feel there's better teaching in straight grades (6:1)

- develops more responsibility in the 5s in a 5/6 (1:4)

The main reasons for creating or avoiding multigrade classes concerned parent and teacher perceptions (predominantly negative) and the administrative necessity of dealing with unevenly distributed or small enrolment numbers. Most individuals offering the numerical necessity rationale belonged to the schools which had many multigrade classes, while those expressing the teacher/parent perception rationale tended to belong to schools without them. It appears that an educational rationale concerning potential student progress plays little part in decision-making, though perhaps concern about potential effects on achievement is implicit in parent and teacher attitudes.

There is considerable consistency between the weighting given by teachers and school leaders to each of the categories of rationale. School leaders gave slightly more weight to parental attitudes, which is not surprising in view of their leadership role in relation to the parent body.

Given the reliance of some schools on the numerical necessity rationale for having multigrade classes, it is interesting to speculate what those schools would do, were they to have that necessity removed. Some indication can be obtained from responses to the question of whether the school followed a practice of placing children in a single grade in the year following a multigrade placement. Twenty teachers and leaders from the four schools with multigrade classes responded to this question; 80 per cent of these indicated that children would be placed in a single grade if possible in the following year. As one interviewee commented:

> - with a policy that children are not in a composite in two sequential years, in effect you're saying that composites are 'bad news' (3:1)

In all schools, the process used currently or in the past for allocating students to multigrade classes involved both teachers and leaders, with most of the actual allocation being delegated to teachers because of their close knowledge of the individual students. Following a parental request, schools would on occasion, but very rarely, allow a child to be re-assigned from a multigrade to a single grade class. Principals had devised strategies to handle such requests. An example shows the typical strategy, as well as the time involved:

> I'd avoid the problem by meeting with the parent, then the teacher, then have a round table discussion, then offer to monitor for six weeks and discuss afterwards. I've never had to move a child. (3:1)

2. Allocation of students to multigrade classes

Three criteria were used in the allocation of students to multigrade classes: Ability; Social/behavioural characteristics; and Equalisation. The results are presented in Table 2 (Appendix 2).

- Ability: General; reduced range; mixed abilities; avoidance (49.2 per cent of comments):

  > - ability is only one of the considerations (5:7)
  >
  > - those able to work independently (4:3)
  >
  > - not the top kids, more the middle of the road with a couple of

exceptions (very low kids) for whom the teacher could cater - want a range of kids (3:1)

- would be ideal to have bright 1s and weak 2s (4:7)

- mix levels of ability (5:3)

- based on social grouping - who works best with whom - not ability (2:5)

- Social/behavioural characteristics: Friendships; developmental level; behaviour problems (46 per cent of comments):

  - social groupings, keep with friends, a positive class mix (5:1)

  - more mature Preps and less mature Year 1s (6:6)

  - spread volatile personalities across classes (2:8)

- Equalisation: Numbers; problems; abilities (4.8 per cent of comments):

  - an even distribution of children with problems and also numbers (5:5)

  - a balance of ability, behaviour and adaptability (2:4)

  - try to equalise classes on ability (2:3)

There is a high degree of consistency between teacher and school leader perceptions of the criteria used for allocating children to multigrade classes. Both groups placed strong and almost equal emphasis on ability (often in terms of reducing the range and ensuring a high proportion of independent learners) and on social/behavioural characteristics of students.

Perceptions of the relative ease or difficulty of student learning in multigrade classes

Interviewees were asked a general question initially about whether they thought some students found it easier or harder to learn in multigrade classes, then specific questions were put in order to tease out the issues. Results presented in tabular form are to be found in Appendix 3.

Neither teachers nor school leaders as a group appear to hold firmly to the view that it is necessarily harder for students to learn in multigrade classes; only 7.7 per cent of all interviewees responded in that way. Again there was consistency in the perceptions of the two groups; few responded with unqualified opinions that it was harder or easier for children to learn in multigrade classes. Most (66.7 per cent

overall) responded in qualified terms, indicating that ease/difficulty of learning depended on one or more factors in addition to the structure of the class. This suggests that most respondents did not see the multigrade structure alone as a determinant of the level of learning difficulty.

1. General ease/difficulty of learning

The issues mentioned in relation to interviewees' responses fell into three categories: Teachers and teaching; Student characteristics; and Class formation. Results are presented in Table 3 (Appendix 3).

- Teachers and teaching: Teaching/learning strategies; quality; organisation and planning; curriculum (53.6 per cent of comments):

  - either composites or straight grades can be effective, depends how the teachers structures the classroom and the teaching/learning environment (4:6)

  - child who is proficient but lacking confidence can be helped through monitoring/cross-age tutoring (6:6)

  - it's easier: children pick up what others are taught (4:4)

  - depends on the quality of the teacher, everything depends on that (4:1)

  - put very strong teachers in composites because of added challenges (3:1)

  - depends how well organised the teacher is (2:6)

  - depends on the teachers' knowledge of the curriculum at both year levels (6:4)

- Student characteristics: Learning styles; range; ability/achievement; behaviour (31.9 per cent of comments):

  - must be independent learners, if not they get left behind (3:8)

  - need a majority of those known to go to task quickly, even if abilities vary (6:7)

  - it exaggerates the enormous range of abilities in any classroom (3:1)

  - depends on the nature and ability of the children (2:6)

- not suitable for the very weak or very disruptive students (4:6)

- Class formation: Sub-group size; class size; friendship groups (14.5 per cent of comments):

- insecurity if one age group has very small numbers, for example six Year 5s in a 5/6 (3:4)

- depends on class size - a composite of 20 would be a 'boomer' (6:6)

- the number of children in the grade matters - some would get lost in a big grade (6:8)

- can be socially hard if not enough peers (4:5)

Although the majority of interviewees adopted an 'it depends ...' position, there was nevertheless considerable disagreement amongst the respondents about the level of ease/difficulty of student learning in multigrade classes. This might be taken to suggest the lack of a sound body professional knowledge on the issue. However, in contrast to the disagreements about their conclusions, there was strong agreement about which underlying issues were important. The interesting question is why individuals differ in their conclusions even though they agree about the basic issues that must be considered.

The most important issue identified concerned the teachers of multigrade classes, the strategies they use, the quality of their teaching, their ability to organise and plan, and their curriculum expertise. This is consistent with research evidence that teaching quality has a significant impact on students' learning progress (Hill & Rowe, 1996, 1998; Scheerens & Bosker, 1997). Table 3 indicates that school leaders placed relatively stronger emphasis on this issue than do teachers, probably the result of the school level role responsibilities the former have for the assignment of teachers to classes, the maintenance of high standards of student progress, and the task of coping with dissatisfied parents. Teachers, on the other hand, placed relatively more stress on class size and composition, presumably because these are immediate and vital factors affecting their daily work.

Permeating the comments about issues was the implication that multigrade classes bring additional complexities and challenges over and above those of the single grade classroom. The need for strong and experienced teachers, teaching strategies that meet individual student needs, good organisation and planning skills, excellent knowledge of curriculum, a high proportion of independent learners and a well-balanced and appropriately-sized class are all highly desirable features of any

classroom. Yet when they are all mentioned as being especially important in the multigrade class then, by implication, teaching and learning in these classes is seen to be more challenging.

It might be expected that teachers and leaders would make reference to students' actual achievement levels in multigrade and single grade classes, in response to a question about comparative ease/difficulty of learning in them. Certainly that would be an appropriate response. In this study only two principals and one assistant principal made reference to achievement levels, and even these comments were oblique non-specific or anecdotal.

2. Ease/difficulty of learning for particular student groups

The series of probes designed to elicit more specific understandings about ease/difficulty of learning in multigrade classes resulted in fewer responses than were given to the more general question, so detailed analysis of the results for each probe is not warranted. Results for this section are presented in Tables 4 to 8 in Appendix 3.

As in the case of the general question, there was a spread of opinion again amongst interviewees about whether learning in multigrade classes was easier or more difficult, under certain specified conditions: junior vs senior year level within the school, upper vs lower year levels within the class, fast vs slow learners, more vs less mature students, and more vs less attentive students

One exception was the stronger agreement among interviewees about the question of upper vs lower year levels within the class. Some 65 per cent of comments indicated that it was easier for students to learn in the lower level and/or harder for them to learn in the upper level (Table 5). This view is a commonly held perception in the community.

Once again, in spite of disagreement about conclusions, there was strong consistency about the crucial issues involved. For example, in the questions concerning junior/senior year levels within the school and upper/lower year levels within the class, two issues were identified. The first related to learning - the size of the gap between the two groups in the classroom in terms of their intellectual capacities and their learning tasks, the extent to which the interaction between the two groups can stimulate and extend their learning, allow reinforcement of earlier learning, or fail to challenge and thus produce stagnation. The second focused on social issues: the benefits of role modelling, the gains in confidence and responsibility from cross-age tutoring, the need for sufficient peers to allow friendship choices to be made, and the avoidance of older children being stigmatised and humiliated if their achievement level is lower than that of the younger children.

Discussion of questions relating to the characteristics of students (pace of learning, student maturity, and student attentiveness) saw the emergence of another common issue - teaching factors. Here the focus was on the range of students within the multigrade class, the need for teaching strategies that met those varying individual needs, and the teaching and organisational abilities required of teachers if they were to handle the range of students successfully. Teacher and leader comments turned repeatedly to the issue of handling of the range and diversity of the students. This seems lie at the centre of the challenge of the multigrade class, not surprisingly since it is the essence of that particular class structure.

Teaching/learning strategies in multigrade classes

Interviewees were asked about differences between strategies used in multigrade and single grade classes, and about particularly important strategies for multigrade classes. Most interviewees simply wanted to discuss the teaching strategies they used, without making comparisons.

1. Teaching strategy issues

Four types of teaching strategy issues were discussed: Attention to student needs; Learning in groups; Planning and organisation; and Curriculum. Results are presented in Table 9 (Appendix 4).

- Attention to student needs: Individual differences; year level differences; student learning styles; personal/social maturity (34.4 per cent of comments):

  - supposed to be teaching to each individual child whether in a composite or straight grade (1:2)

  - more aware of year levels - even though they're working in mixed year level groups, you have to keep in mind which children are in grade 5 and which are in grade 6 (2:7)

  - independent learning is important(4:7)

  - more conscious of the lower grade group - only ten year 5s, so I make sure I spend time with them each day ... differences in maturity level are obvious at the beginning of the year (4:6)

- Learning in groups: Co-operative and ability grouping (28.1 per cent of comments):

  - greater emphasis on students learning from each another therefore group

work is important so both levels can benefit (6:2)

- - a greater emphasis on co-operative learning (5:2)

- we run maths on ability grouping at 5/6 (2:1)

- no differences. I like to work with ability or co-operative or partnership groupings (2:5)

- Planning and organisation: Amount and importance (21.9 per cent of comments:

  - not harder to teach composites, but must be better organised (1:2)

  - everything has to be planned (6:6)

  - must be **very** organised, know exactly what lessons you're going to have, and have two things going simultaneously (6:8)

  - the most important skill is organisation (1:3)

- Curriculum: Knowledge of curriculum, multiplicity of programs, activity-based and pupil centred curriculum (15.6 per cent of comments):

  - need good knowledge of curriculum (1:3)

  - you would assume a multiplicity of programs so that all composites would work well (4:2)

  - use approaches like enquiry-based learning where students do research (2:1)

  - use modern activity-based, pupil-centred activities (1:3)

Three of the four teaching strategy issues focused on the students themselves, their individual needs, differences, and capacity to learn together, as well as their active involvement in the curriculum. The fourth issue, the critical importance of planning and organisation, is commonly reported in other research on multigrade classes. There was an absence of the concern, found in other research (Mason & Burns, 1995; Mason & Doepner, 1998; Veenman, 1995) about the constraints arising from the presentation of two separate curricula.

Teachers, compared with leaders, were much more strongly concerned about strategies which enable them to meet student needs and individual or group

differences. Their focus is clearly inside their own classroom. On the other hand it is only the leaders who comment on the need for particular approaches to curriculum, a concern that is more of a school level one and appropriate to the role of the school leader.

2. Specific teaching strategies

The series of questions probing the generalisations made about teaching strategies elicited comment about grouping by year and achievement levels, the use of cross-age tutoring, and ways of ensuring that all students received attention and none were neglected. Results are to be found in Tables 10 to 13 (Appendix 4).

Few interviewees advocated having no year level groupings at all in multigrade classes. Similarly, few favoured using year level grouping as the main strategy. Most of those who did were leaders who wanted to satisfy parents or the needs of particular teachers. The majority of respondents favoured a mixed approach which included some grouping by year level together with other forms of grouping within and across year levels, whole class teaching and individualised work. When grouping on a year level basis was mentioned it was almost invariably related to a particular subject area. The most commonly mentioned subject for which year level grouping was used was mathematics; 47.1 per cent of all subject specific comments concerned mathematics. In contrast, English/Literacy was much more likely to be taught across year levels.

A similar pattern of responses was found in relation to the strategy of grouping by achievement level (Table 11, Appendix 4). The favoured approach (63.6 per cent) was to use achievement/ability level grouping within and across grade levels, together with whole class teaching, other forms of grouping and individualised work. the use of achievement level grouping related to particular subjects, with mathematics once again being the common choice (69.2 per cent).

There was very strong endorsement of cross-age tutoring as an appropriate and useful strategy to employ in the multigrade classroom. As Table 12 (Appendix 4) indicates 88.9 per cent of respondents favour this strategy. Reasons for this preference focused almost exclusively on the benefit to be gained by the tutor rather than the student being helped (81.3 per cent of comments) and most of the benefits were seen to be social ones (87.5 per cent). Some warnings were also given.

> - yes, good older children are used; they're not getting enrichment but are increasing their social skills (1:3)
>
> - best when an older child is helping a younger one, leads to self-esteem, especially if the older one is not so able (4:1)

- had able children help others. They loved it. It increased their maturity (3:5)

- students enjoy doing it at times. It's OK to use the resource as long as it's not their main focus (1:8)

There was an even split among interviewees in relation to whether ensuring all children received attention called for different strategies in the multigrade as opposed to the single grade class (Table 13, Appendix 4). Those who maintained the situations were no different tended to emphasise the importance in any class of attending to individual children.

- equally true for composite or single grade that each child needs the attention of the teacher (2:7)

- it's important in any grade (6:6)

- as in a straight grade, it depends on the teacher's personality and ability. If you focus on the top and bottom, the middles and quiet ones miss out (1:4)

Those who felt the situation in the multigrade class was somewhat different, stressed that this was a matter of particular concern and that there was a need to make a deliberate and conscious effort to ensure that all received attention. The children mentioned as most likely to miss out on teacher attention were the able, the middle level and the quiet students.

- it is a concern. Depends on the skill and experience of the teacher to really know where children are at and where they need to get to. If you don't have an experienced teacher it's more likely you won't get equal attention (6:3)

- have to make a concerted effort to ensure all are spoken to every day and their work is corrected (5:7)

- probably the able are even more neglected because the teacher has less time (3:5)

Parent, teacher and leader attitudes to multigrade classes

Although no specific question was asked of interviewees about parental attitudes to multigrade classes, throughout this section of the interview teachers and leaders made reference to the attitudes, feelings and perceptions of parents. All of these

comments were collected (some 50 in all) and categorised. The results are presented in Table 14 (Appendix 4). It is clear that both teachers and leaders perceive most parents to have a negative attitude to multigrade classes (80 per cent of all comments). Even the comments expressing perceptions of positive attitudes were guarded rather than confident, while those expressing a neutral view related mainly to inevitability because of enrolment numbers.

> - parent feedback about the P-2 combination is that this is probably OK (4:1)
>
> - they don't mind children being in the lower half (6:6)
>
> - it's not a hot potato in this school; it's expected because of numbers (5:2)
>
> - not an issue for parents generally because the school is so small that composites have become a way of life (5:7)

The explanations given for negative parental attitudes fell into four categories. Concern about the effect on learning predominated, with 44.4 per cent of comments alluding to this.

> - parents tend to feel that children in the older level won't be extended or benefit (6:2)
>
> - main thing for parents is they think the children in the upper year level are dumb and that's the reason they're with the lower level in the composite (1:2)

Other concerns related to social disadvantages, lack of understanding of how children are taught in multigrade classes and the difference that the context (rural versus urban) makes to parental acceptance of multigrade classes.

Overall, school leaders made twice as many comments as teachers did about parental attitudes, probably reflecting once more of the differential role responsibilities of leaders and teachers in relation to parental concerns.

Teachers were asked directly during the interview about their preferences and feelings in relation to multigrade and single grade classes. Of the 23 teachers interviewed, 20 had had experience in teaching multigrade classes. Ten preferred to teach single grade classes, three preferred multigrade classes and seven had no preference. On the basis of the literature, it might have been expected that a higher proportion of teachers would have expressed a definite preference for single-grade teaching. In terms of the match between teachers' preferences and their current

teaching assignment at the time of interview, only two mismatches existed, one teaching a multigrade who preferred a single grade class and one teaching a single grade class who preferred a multigrade class. No indication was given by any interviewee about whether teacher preferences were taken into account in the assignment of teaching duties.

The reasons offered by teachers and leaders for teacher perceptions of multigrade classes fell into four categories: Range of students, Amount of work, Student learning, and Social factors. Results are presented in Table 15 (Appendix 4). Two issues predominated for both teachers' self-perceptions and leaders' perceptions of teacher concerns: the range of students in multigrade classes and the amount of work involved. Teachers, unlike leaders, also mentioned concerns about student learning and social factors.

- Range of students: Complexities arising from the range of students' abilities, achievement, maturity, insufficient time, level of difficulty (45.2 per cent of comments):

  - prefer single grades because composites increase the range of abilities so you need more time (1:6)

  - so many varying abilities, double the range in a single grade (6:8)

  - didn't particularly like it - it was hard because of the mixed range of abilities (3:8)

  -teachers feel the wider span of children means more work (6:1)

  - not much different from a straight grade; there's still a range of learning (4:7)

- Amount of work: Hard work, amount of planning and organisation (35.5 per cent of comments):

  - teachers believe it's harder work and prefer not to have them (1:3)

  - believe it's too much hard work; you have to have more structured planning (4:8)

  - I worked **really** hard because I was planning for two groups (10 hours a week planning now, 18 then):... I can see why teachers drop off (3:5)

  - half as much work again because you need much more planning time (6:6)

The bringing together of teachers' comments from across the interviews, as well as leaders' perceptions of teachers' attitudes, serves to highlight two recurring and significant themes throughout the data. The range of students in a multigrade class is a central issue for teachers, most seeing it as the central challenge for this form of class structure. The second concerns the work demands. Amongst those who commented on the amount of work, organisation and planning involved in teaching multigrade classes, there is virtual unanimity that such classes require greater time and effort.

School leaders were not asked directly about their attitudes to multigrade classes. In the course of the interview, 16 of the 23 volunteered some expression of opinion and preference; three preferred single grades, two multigrade classes and eleven said they did not mind or thought both were satisfactory. Given that leaders are in the position of having to implement both types of class structure, it is to be expected that they would be somewhat circumspect in expressing preferences.

Discussion

A strong and significant negative effect on achievement was found for students taught in multigrade classes in the 1993 results of the VQSP. The size of this effect had reduced markedly in data collected in 1994, to the extent that it was no longer significant although still slightly negative. The purpose of the follow-up case study, undertaken in 1995, was to explore teacher and school leader understandings and experience of multigrade classes to see whether potential explanations might emerge, which could then be tested in subsequent quantitative research. The results provide evidence of the perceptions of interviewees rather than of what actually happens in schools.

Reducing the complexity and vulnerabiliy of multigrade classes

The results of the case study investigation into teacher and leader perceptions gives strong support to the conclusions drawn from other research that the multigrade class structure is a more difficult, complex and challenging one than that provided by the single-grade structure (Mason & Burns, 1995, 1996; Mason & Doepner, 1998; Veenman, 1995, 1996; Veenman & Raemaekers, 1995). Repeated emphasis is placed on the importance of having the strongest, best, most experienced teachers in multigrade classes, the amount and quality of organisation and planning needed, the exaggerated range of students (ability, achievement, maturity, behavior) in the classroom, and the importance of having a proportion of independent learners who will continue to work on their own when the teacher is occupied with another group. A further indication is the strong majority preference to place children in a single-grade class in the year following a multigrade placement. The additional

complexity and difficulty of the multigrade structure makes the multigrade class more vulnerable to the impact of further pressures and problems than the single-grade class.

Although teachers and leaders perceive the multigrade structure to be more challenging, their responses in this study also indicated that they do not perceive the structure alone and of necessity to be the cause of negative effects on students and teachers. Were that the case there would have been a significant majority of interviewees agreeing that learning was more difficult for students in multigrade classes. Instead, two-thirds of them indicated that it was not a matter of the structure alone, but whether or not several other factors were present simultaneously. These were the replies that began "It depends...". Those additional factors were seen to have the power to exacerbate or moderate the level of difficulty.

The specific factors mentioned by teachers and leaders were:

- the choice of teacher, teacher ability, teacher skill in organisation and planning
- size of class
- balance in size of year level sub-groups (gender balance within sub-groups was not mentioned but would be important)
- number of children with challenging behavioural problems
- range of student abilities, achievement and styles of learning, especially independence
- arrangements for students to mix with their year level peers in other classes for activities such as sport and excursions
- organisation of a two-year curriculum, so students do not miss out on curriculum coverage
- time taken to deal with additional parental pressure
- additional time and pressure from the demands of on-going school level changes.

Suppose, for example, a school were to create a multigrade class for the first time; the teacher assigned to the class is the most recently arrived teacher, the lowest in the pecking order. In the class of 32, five are year 4 students and 27 are in year 5. Three children with extreme behaviour problems are placed in the class, then during the year a fourth is added instead of being placed in a parallel single-grade class. The teacher asks for guidance about what to do in relation to curriculum and sport, because the two-year curriculum organisation cuts across grades 4 and 5, and the school organises sport on a year-level basis. No guidance is given and the teacher is asked to make the decisions alone. Under such circumstances the complexity and challenge of the multigrade classroom would undoubtedly be magnified. A very different situation would be created if school policy and practice produced

multigrade arrangements that discriminated strongly and consistently in favour of those classes.

Most of the factors mentioned above lie within the control of the school, at least to some extent. They are aspects of the school's instructional organisation, that is the school level administrative arrangements that shape the students' learning environment and opportunities to learn. The school's instructional organisation includes matters such as class size and composition, teacher allocation to classes, grouping arrangements of teachers (for example, in teams or departments), curriculum coverage, pacing and sequence, time-tabling arrangements, provision to maximise time-on-task, and monitoring of achievement, amongst others (Bossert, Dwyer, Rowan & Lee, 1982). A school's instructional organisation has the capacity to increase or decrease the level of student achievement (Heck, Larsen & Marcoulides, 1990), particularly where it is able to affect factors critical to students' learning progress, such as time-on-task and opportunity to learn (Scheerens & Bosker, 1997).

On the basis of the data from the present study, it is suggested that attention given to three more aspects of the school's instructional organisation would further moderate the difficulty of multigrade classrooms for teachers and improve the learning outcomes for students.

- Regular collection of data to monitor student progress on a school-wide basis would, amongst other things, enable teachers to see whether their teaching strategies in multigrade classes were effective for the whole class and for particular students within it. The data would also provide a basis for subsequent planning. Monitoring student achievement is known to be a significant factor in increasing achievement (Scheerens & Bosker, 1997). As previously indicated, teachers and leaders in the present study did not make reference to achievement data in their responses.
- Professional development concerning appropriate teaching strategies for the multigrade classroom was not mentioned by interviewees. This is a strategy recommended and implemented by Veenman (Veenman, 1995; Veenman & Raemaekers, 1995). The value of professional development in terms of its significant impact on student achievement, as well as on teacher attitudes and energy, was demonstrated clearly in the results of the VQSP (Hill, Rowe, Holmes-Smith & Russell, 1996).
- Team teaching and other forms of professional collaboration among teachers reduce the traditional isolation of teachers in the classroom, provide adult feedback and recognition to teachers about their work, and stimulate professional growth (Hargreaves, 1992). For teachers of multigrade classes, the opportunity to share the difficulties and challenges of their classroom instead of

handling them entirely alone, would be of benefit. An example of this was seen in one of the case study schools, where team teaching across parallel multigrade classes was used for mathematics.

The concept that schools are able to reduce the challenges inherent in the multigrade structure through deliberate and targeted organisational arrangements is consistent with the suggested explanation for the marked reduction in the negative effect of multigrade classes on student achievement in the VQSP between 1993 and 1994. In the meetings held to discuss 1993 VQSP results, the feedback to principals about multigrade class effects was accompanied by advice about the highly significant impact the quality of the teacher has on student achievement and discussion of strategies for improving the effectiveness of multigrade classes. Subsequent verbal feedback from principals indicated that a more concerted effort was made to allocate the best teachers to multigrade classes in 1994. As has been indicated above, there are many other aspects of instructional organisation, in addition to the purposeful selection of teachers, that can be deliberately and consciously arranged in order to reduce the vulnerability of multigrade classes.

Teachers' perceptions, sense of efficacy and professional satisfaction

The results of the present study show that teachers, school leaders and parents in general have strong negative perceptions of multigrade classes. This is consistent with previous research findings (Mason & Burns, 1995, 1996; Mason & Doepner, 1998; Veenman, 1995, 1996). Mason and Burns (1996) sought to explain teacher attitudes in terms of the greater stress experienced by teachers as a result of the greater workload and more difficult task of teaching in a multigrade class. Veenman (1996) acknowledged the greater difficulty of the task and the negative attitudes of multigrade teachers but related these to the use of less than optimal teaching strategies. He advocated increased use of strategies characteristic of the multi-age classroom. Interviewee comments in this study do not emphasise nor even mention stress, though no doubt the repeated references to hard work, time-consuming planning and time pressure might imply stress. Their comments about teaching strategies suggested that they were not only aware of but already using the kinds of approach that Veenman specified (for example, co-operative learning, cross-grade grouping, and peer tutoring) and the literature on multi-age classrooms(for example, Fogarty, 1994; Miletta, 1996) advocates.

An alternative explanation is offered. The two main issues which interviewees raised repeatedly were the range of students in the class and the amount of work, organisation and planning. Both issues were stressed in each of the four sections of the interview: reasons for school policies and basis of student allocation to multigrade classes; ease/difficulty of learning; teaching/learning strategies used; and

teacher, parent and leader perceptions of multigrade classes.

The range of student ability, achievement, behaviour and individual need in the multigrade classroom is a crucial issue. It is argued that the exaggerated range of students present in a multigrade classroom must have significant impact on teachers' sense of efficacy as teachers and on their satisfaction with their work. Efficacy, in general terms, is a person's perceived expectation of succeeding at a task through personal effort. For teachers, this means their perceived expectation that they are able to affect student learning (Lee, Dedrick & Smith, 1991). Professional satisfaction derives from things that are intrinsic to the nature of the teacher's work, such as the affective rewards of being with children, perceived professional competence/efficacy, the extension of skills, and the feeling of being in control of one's professional life (Nias, 1989).

A regret expressed by teachers in this study was that they felt unable to give the very diverse group of students in multigrade classes the individual help and attention they needed. Teachers were aware of what ought to be done to improve students' learning, but they could not actually do it because their time was so limited. Teachers even reported having to establish a schedule so they would talk to each student each day and not neglect any. Heightened parental concern and pressure on teachers would no doubt exacerbate the situation. Teachers' sense of efficacy is likely to diminish in these circumstances and thus their satisfaction also. Nias (1989) found that primary teachers' satisfaction with work reduced in similar circumstances - when they had large classes, with insufficient support, no time to follow up or help individual children, to reflect on their teaching or to cover the curriculum properly. It is also important to note that there is research evidence which links teacher efficacy to student achievement (Ashton & Webb, 1986; Rosenholtz, 1989)

Added to the difficulties created by the range of students is the sheer amount of work, the organisation and planning that takes up so much time and energy. Amount of work alone does not necessarily have an adverse effect on teacher attitudes. The VQSP found that increased teacher participation in professional development activities, which can be very demanding of time and energy, actually reduced teachers' perception of the work demands placed on them and increased their perceived energy level (Hill, Rowe, Holmes-Smith & Rusell, 1996). The time spent in professional development proved be professionally stimulating and invigorating for teachers, and provided them with useful feedback about their own skills. In contrast to this, the additional time and energy spent in planning for, organising and teaching multigrade classes seems to fail to bring professional satisfaction, a sense of increased efficacy or positive feedback about professional skills.

A comment made by Mason and Burns (1996:319) provides a nice link between the

ideas of reducing complexity through instructional organisation and enhancing teachers' sense of efficacy and professional satisfaction:

> *Although progressive instructional practices may indeed make multigrade and multi-age classrooms exciting and challenging learning environments, and there are teachers that thrive on such challenge, we think teachers will require considerable support and will need to expend considerable effort to reap rewards from these classrooms. Lacking such support, most teachers find multigrade classes to be difficult classroom environments to manage ... .*

Helping to diminish the complexity and control the vulnerability of the multigrade classroom is, of course, as much a leadership issue as it is a teaching issue.

The importance of context

Comparison of the results of this study with the findings of studies in other countries indicates some interesting differences. For Californian teachers, the press to prepare and deliver two separate curricula was the foremost concern and major cause of discontent; principals also identified this as their primary concern (Mason & Burns, 1995; Mason & Doepner, 1998). The next strongest concern for teachers was the reduced and inadequate time they had for instruction and individual help for students. In contrast, the Victorian interviewees made few references to year level curriculum constraints and did not treat it as a matter of deep concern. The probable explanation of the difference lies in the different requirements of the two education systems. In the absence of the Californian concern with separate curricula, both samples would agree that the primary concern is the difficulty of providing individual help to students ranging in ability within the multigrade classroom.

A second contrast with the Californian findings lies in the basis of allocation of students to multigrade classes. While both the Californian and Victorian samples reported purposeful selection of students, there were some differences in the criteria used. Although Mason and Burns (1996) claimed that the most able students were selected for multigrade classes, the evidence from his Californian studies (Mason & Burns, 1995; Mason & Doepner, 1998) did not support this. In these two studies most teachers and principals, like their Victorian counterparts, said they selected students to create homogeneity of ability, though a small percentage sought to create heterogeneity. Both samples also used the criteria of behaviour and independence.

However, the Victorian sample placed strong emphasis on social criteria, such as developmental level and friendship groupings. No mention was made of this as a criterion by Californian respondents. Throughout the present study, teachers and principals placed considerable and consistent emphasis on the social aspects of the

classroom, the school and learning. Perhaps this results from another contextual difference between the two systems of education.

The distinction made by Veenman (1995) between multigrade and multi-age class structures appears to be quite blurred in the schools forming the sample for this study. One of the criteria he proposed in his definition of the multigrade class was that year level curricula and achievement expectations be retained. The present study seems to indicate that, although achievement expectations were retained, separate year level curricula were not necessarily taught, at least not in all subjects. Neither do the types of teaching strategy described in this study match those described by Veenman as typical of the multigrade class. Nevertheless, the remaining criteria are met: two or more adjacent year levels taught in the one classroom by the one teacher for most of the day; and the embedding of the class within the graded system whereby students are identified and promoted by grade level. Although these classes do not meet all the criteria of the multigrade class as defined by Veenman(1995), neither do they meet all of those for the multi-age class. Once again, it appears that the educational systems and the countries in which they are located might be the source of the different conceptions and operation of the multigrade class.

A second contextual issue is one raised by some of the interviewees in the present study. In the words of one principal:

> *"The idea of multi-aging has come from country infant rooms where there was no choice. To impose a structure which was developed for the country and put it in a huge city environment hoping to create social cohesion hasn't succeeded." (6:1)*

Two others (both principals) made reference to the different reaction to multigrade classes in rural and urban schools. Previous research has produced similar findings, both in other countries and within Australia (Pratt & Treacy, 1986; Veenman, 1995). It is sometimes suggested that multigrade classes would be viewed more positively in urban schools if teachers knew about or used the strategies adopted in rural schools and if parents understood them. However this ignores the difference in context. A rural school is usually firmly embedded in a close-knit local community. It is often the centre of community life and is supported by the local families, many of whose parents and grandparents have attended the same school. Class sizes are often smaller than in city schools and it is usually obvious that multigrade classes are the only feasible structure. The urban school context is different. Given these points, it is not surprising that attitudes to multigrade classes differ between country and city.

The issue of context is an important one. Literature reviews and meta-analyses need to be sensitive to problems of validity when arriving at conclusions on a research basis that draws from widely varying contexts. Veenman (1996) acknowledged this

when, in his re-analysis of research on multigrade classes, he excluded studies from the radically different contexts of developing countries in Africa and South America. Similarly, it is unwise to adopt developments, reforms or educational structures from one context and introduce them to another without careful analysis.

Understandings generated for quantitative testing

The intention of the qualitative study was to explore teachers' and school leaders' understandings and experience of multigrade classes, to see whether potential explanations might emerge which could then be tested in a subsequent phase of quantitative research. The following suggestions arise from the results of the study.

- Potential explanations for improving student achievement lie in the concepts of reducing the complexity and vulnerability of the multigrade classroom and enhancing the multigrade teacher's sense of efficacy and professional satisfaction. Thus the first suggestion is for investigation of the impact on

* student achievement,

* teachers' sense of efficacy and professional satisfaction,

* teachers' perceptions of multigrade teaching,

* parental attitudes to multigrade classes,

  of the deliberate, planned removal through the school's instructional organisation of the whole range of additional problems and pressures which exacerbate the complexity and difficulty of the multigrade structure

- An interesting finding of the present study was the difference between the approach to the teaching of mathematics and other subjects. Differential teaching/learning strategies were reported primarily and frequently in mathematics, but rarely in other subjects. Mason and his colleagues (Mason & Burns, 1995; Mason & Doepner, 1998) made a similar finding in their Californian studies. It is tempting to see a possible connection to the VQSP results which showed mathematics to be less vulnerable to multigrade class membership than literacy, where teaching strategies were different. It is therefore suggested that an investigation be undertaken of the

  * actual (as opposed to perceived) incidence of use by multigrade teachers of differentiated teaching/learning strategies in different areas of the curriculum and

* the impact of these strategies on student achievement.

The exploratory study of mathematics instruction in multigrade and single-grade classes by Mason and Good (1996) provides a starting point

- Is there a body of tested, understood and widely accepted professional knowledge in relation to the organisation and teaching of the multigrade class? Do teachers and leaders base their opinions and actions on such a body of professional knowledge? Although the results of this study show that interviewees agreed about the issues on which their opinions and conclusions were based, their opinions and conclusions differed, as did their positions on the issues they identified. An investigation of this would help in deciding whether to focus on professional development to disseminate understanding of an existing body of professional knowledge or on research that helps to establish such a body of knowledge.
- Attention in this and other studies of multigrade classes has been given to the perceptions and experiences of teachers, principals and parents. The perceptions of the major participant group in the process, the students, has been neglected. Mason and Doepner (1998) draw attention to this omission. Students are very acute observers of what happens in classrooms. They can also give insights into how particular experiences affect them, their learning, motivation, comfort and satisfaction. Ruddock and her colleagues (Ruddock, J., Chaplain, R., & Wallace, G., 1996; Ruddock, J., Day, J., & Wallace, G., 1997) argue the need to include discussion with students in developing and evaluating all forms of school improvement. Although the VQSP case study investigated student perceptions and experience in relation to other research questions, it did not do so in relation to multigrade classes. An investigation of students' perceptions of the impact of multigrade and single grade classrooms on their learning progress and social development is advocated.

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APPENDIX 1

INTERVIEW SCHEDULES: EXTRACTS CONCERNING MULTIGRADE CLASSES

A. TEACHER INTERVIEWS

Many schools these days have composite or multi-age classes, sometimes because they want to have these and sometimes because of the enrolment size and age distribution of children in the school.

(For teachers of composite/multi-age classes)

Now your class is a composite (or multi-age) class. Have you taught composite classes before? How do you feel about it? What do you prefer?

(For teachers of single Year level classes - only if they have taught composites)

Now yours is a single Year level class, but I'm wondering whether you have taught composite classes before? How do you feel about it? What do you prefer?

1. I'm interested in the teaching/learning strategies that you use and the way you organise your class, particularly given that it includes more than one Year/age group. What are the things that you do differently in teaching a composite class, compared with teaching a single Year class?

Are there particular teaching/learning strategies that you think are especially important?

Probes

- differentiated Year level teaching/learning
- cross-age tutoring
- grouping of children according to achievement levels
- ensuring that **all** children receive a share of attention and that some aren't neglected (eg. able children - helping others)
- any other strategies?

2. Do you think, in general, being in a composite class makes it any easier or harder for some children to learn?

Probe

- earlier as opposed to later Year levels (eg. Years P-3 compared with Years 4-6)
- children in the lower compared with the upper Year level in a composite
- children who learn more quickly compared with those who learn more slowly
- children who are more or less mature
- children who are more or less attentive/distractible

(*For all class teachers)*

3. Are there many other composite classes in the school? What are they?

Is there a policy in the school about having composite classes? (Note: If there is a written policy, obtain a copy.)

So how does the school go about deciding whether there will be composites and which Year levels will be involved?

Is there much discussion about this in the school community when classes are being organised for the following year? (Administration? Teachers? Parents?)

How is the decision made about which children will be placed in composites?

Probe

- Who makes the decision?
- Are exceptions made if parents protest?
- Are there any differences between the children who might be placed in the lower Year level o a composite and those placed in the upper Year level? (eg. ability)
- What happens to the children from a composite in the following year? Could they go into another composite or into a single Year level class?

B. SCHOOL LEADER INTERVIEWS

I'm interested in the question of the composition of class groups in the school. Many schools these days have composite or multi-age classes, sometimes because they want to have these and sometimes because of the enrolment size and age distribution of children in the school. I realise it can sometimes be a bit of a hot issue.

1. Are there many other composite classes in the school? What are they?

Is there a policy in the school about having composite classes? (Note: If there is a written policy, obtain a copy.)

So how does the school go about deciding whether there will be composites and which Year levels will be involved?

Is there much discussion about this in the school community when classes are being organised for the following year? (Administration? Teachers? Parents?)

How is the decision made about which children will be placed in composites?

Probe

- Who makes the decision?
- Are exceptions made if parents protest?
- Are there any differences between the children who might be placed in the lower Year level o a composite and those placed in the upper Year level? (eg. ability)
- What happens to the children from a composite in the following year? Could they go into another composite or into a single Year level class?

2. I've been looking at the teaching/learning strategies that teachers use and the way they organise their class when it includes more than one Year/age group.

Are there particular teaching/learning strategies that you think are especially important in a composite class?

Probes

- differentiated Year level teaching/learning
- grouping of students according to achievement levels
- cross-age tutoring
- ensuring that **all** children receive a share of attention and that some aren't neglected (eg. able children - helping others)

3. Do you think, in general, being in a composite class makes it any easier or harder for some children to learn?

Probe

- earlier as opposed to later Year levels (eg. Years P-3 compared with Years 4-6)
- children in the lower compared with the upper Year level in a composite
- children who learn more quickly compared with those who learn more slowly
- children who are more or less mature
- children who are more or less attentive/distractible

APPENDIX 2

POLICY AND PRACTICE REGARDING MULTIGRADE CLASSES

Table 1 Reasons given for school policy/practice regarding multigrade classes

Teacher and leader perceptions Percentage (Number of comments)			
Reason	Teachers	Leaders	Both
Teachers' perceptions*	33.3 (12)	33.3 (23)	33.3 (35)
Parents' perceptions**	27.8 (10)	34.8 (24)	32.4 (34)
Student progress#	8.3 (3)	5.8 (4)	6.7 (7)
Enrolment numbers+	30.6 (11)	26.1 (18)	27.6 (29)

* Teachers' perceptions: Attitudes and preferences; lack of knowledge/competence; difficulty of work

** Parents' perceptions: Attitudes and preferences; rural/city context; social factors; learning progress

Student progress: Effects on teaching and learning

+ Enrolment numbers: Necessity based on numbers

Table 2 Basis of allocation of students to multigrade classes

Teacher and leader perceptions Percentage (Number of comments)			
Criterion	Teachers	Leaders	Both
Ability*	48.2 (13)	50.0 (18)	49.2 (31)
Social/behavioural characteristics#	44.4 (12)	47.2 (17)	46.0 (29)
Equalisation+	7.4 (2)	2.8 (1)	4.8 (3)

* Ability: General; reduced range; mixed abilities; avoidance

Social/behavioural characteristics: Friendships; developmental level; behaviour problems

+ Equalisation: Numbers; problems; abilities

APPENDIX 3

RELATIVE EASE/DIFFICULTY OF STUDENT LEARNING IN MULTIGRADE CLASSES

Table 3 Relative ease of student learning in multigrade vs single grade classes

Teacher and leader perceptions Percentage (Number of individuals)					Issues identified Percentage (Number of comments)		
	Easier	Harder	No diff.	'It depends..'	Teachers & teaching*	Student charateristics#	Class formation+
Teachers	5.9 (1)	11.8 (2)	11.8 (2)	70.6 (12)	48.6 (17)	28.6 (10)	22.9 (8)
Leaders	13.6 (3)	4.6 (1)	18.2 (4)	63.6 (14)	62.5 (20)	37.5 (12)	6.3 (2)
Both	10.3 (4)	7.7 (3)	15.4 (6)	66.7 (26)	53.6 (37)	31.9 (22)	14.5 (10)

* Teachers & teaching: Teaching/learning strategies (45.7%); Quality (31.4%); Organisation and planning (11.4%); Curriculum (11.4%)

Student characteristics: Learning styles (54.6%); Range (22.7%); Ability/achievement (18.2%); Behaviour (4.5%)

+ Class formation: Sub-group size (60%); Class size (30%); Friendship groups (10%)

Table 4 Relative ease of student learning in multigrade vs single grade classes: Junior vs Senior year level within the school

	Teacher and leader perceptions Percentage (Number of comments)					Issues identified Percentage (Number of comments)
	Junior easier	Junior harder	Senior easier	Senior harder	No diff.	Developmental gap*
Teachers	25.0 (4)	18.8 (3)	12.5 (2)	18.8 (3)	25.0 (4)	61.5 (8)
Leaders	8.3 (1)	33.3 (4)	16.7 (2)	16.7 (2)	25.0 (3)	85.7 (6)
Both	17.9 (5)	25.0 (7)	14.3 (4)	17.9 (5)	25.0 (7)	70.0 (14)

* Developmental gap: Intellectual development; developmental tasks; curriculum demands; social maturity

Social factors: Role modelling; friendships; moderating effects; humiliation

Table 5 Relative ease of student learning in multigrade vs single grade classes: Upper vs lower year levels within the class

Teacher and leader perceptions Percentage (Number of comments)						Issues identified Percentage (Number of comments)
	Lower easier	Lower harder	Upper easier	Upper harder	No diff.	Learning*
Teachers	27.3 (6)	4.6 (1)	18.2 (4)	27.3 (6)	22.7 (5)	70.6 (12)
Leaders	44.4 (8)	11.1 (2)	16.7 (3)	11.1 (2)	16.7 (3)	81.3 (13)
Both	35.0 (14)	7.5 (3)	17.5 (7)	20.0 (8)	20.0 (8)	75.8 (25)

* Learning: Extension; stimulation; consolidation; stagnation

Social factors: Confidence; responsibility; stigma; humiliation

Table 6 Relative ease of student learning in multigrade vs single grade classes: Fast vs slow students

	Teacher and leader perceptions Percentage (Number of comments)					Issues identified Percentage (Number of comments)	
	Fast easier	Fast harder	Slow easier	Slow harder	No diff.	Learning*	Social factors#
Teachers	35.7 (5)	0.0 (0)	7.1 (1)	21.4 (3)	35.7 (5)	66.7 (6)	11.1 (1)
Leaders	12.5 (1)	12.5 (1)	0.0 (0)	25.0 (2)	50.0 (4)	42.9 (3)	0.0 (0)
Both	27.3 (6)	4.5 (1)	4.5 (1)	22.7 (5)	40.9 (9)	56.3 (9)	6.3 (1)

* Learning: Extension; challenge; consolidation; stagnation

Social factors: Humiliation

+ Teaching factors: Range of abilities; differentiation; remediation; organisation

Table 7 Relative ease of student learning in multigrade vs single grade classes:

More vs less mature students

	Teacher and leader perceptions Percentage (Number of comments)					Issues identified Percentage (Number of comments)	
	More mature easier	More mature harder	Less mature easier	Less mature harder	No diff.	Learning*	Social factors#
Teachers	30.8 (4)	0.0 (0)	23.1 (3)	23.1 (3)	23.1 (3)	25.0 (2)	50.0 (4)
Leaders	45.5 (5)	0.0 (0)	9.1 (1)	9.1 (1)	36.4 (4)	66.7 (4)	16.7 (1)
Both	37.5 (9)	0.0 (0)	16.7 (4)	16.7 (4)	29.2 (7)	42.9 (6)	35.7 (5)

* Learning: Independence; self-reliance; working by self

Social factors: Role modelling; responsibility; social skills

+ Teaching factors: Time for individual attention; cross-age tutoring

Table 8 Relative ease of student learning in multigrade vs single grade classes: More vs less attentive students

Teacher and leader perceptions Percentage (Number of comments)								
	More attentive easier	More attentive harder	Less attentive easier	Less attentive harder	No diff.	Teaching factors *	Class formation#	
Teachers	0.0 (0)	0.0 (0)	8.3 (1)	25.0 (3)	66.7 (8)	62.5 (5)	25.0 (2)	
Leaders	33.3 (4)	0.0 (0)	0.0 (0)	41.7 (5)	25.0 (3)	42.9 (3)	14.3 (1)	
Both	16.7 (4)	0.0 (0)	4.2 (1)	33.3 (5)	45.8 (3)	53.3 (8)	20.0 (3)	

* Teaching factors: Ability; classroom organisation; strategies

Class formation: Class size; number of children with problems

+ Student characteristics: Ability; independence

Table 9 Teaching strategies in multigrade vs single grade classes

Teacher and leader perceptions Percentage (Number of comments)			
Strategies	Teachers	Leaders	Both
Attention to student needs*	58.3 (7)	20.0 (4)	34.4 (11)
Learning in groups**	25.0 (3)	30.0 (6)	28.1 (9)
Planning and organisation#	16.7 (2)	25.0 (5)	21.9 (7)
Curriculum+	0.0 (0)	25.0 (5)	15.6 (5)

* Attention to student needs: Individual differences; year level differences;

student learning styles; personal/social maturity

** Learning in groups: Co-operative and ability grouping

Planning and organisation: Amount and importance

+ Curriculum: Knowledge of curriculum; multiplicity of programs; activity-based and pupil-centred

Table 10 Teaching strategies in multigrade vs single grade classes

Grouping by year level

Teacher and leader perceptions Percentage (Number of comments)			
Grouping by year level	Yes	Mixed	No
Teachers	12.5 (2)	68.8 (11)	18.8 (3)
Leaders	31.6 (6)	57.9 (11)	10.5 (2)
Both	22.9 (8)	62.9 (22)	14.3 (5)

Table 11 Teaching strategies in multigrade vs single grade classes

Grouping by achievement level

Teacher and leader perceptions Percentage (Number of individuals)			
Grouping by achievement level	Yes	Mixed	No
Teachers	5.9 (1)	70.6 (12)	23.5 (4)
Leaders	31.3 (5)	56.3 (9)	12.5 (2)
Both	18.2 (6)	63.6 (21)	18.2 (6)

Table 12 Teaching strategies in multigrade vs single grade classes

Cross-age tutoring

Teacher and leader perceptions Percentage (Number of individuals)		
Cross-age tutoring	Yes	No
Teachers	80.0 (12)	20.0 (3)
Leaders	100.0 (12)	0.0 (0)
Both	88.9 (24)	11.1 (3)

Table 13 Teaching strategies in multigrade vs single grade classes

Ensuring equal attention

Teacher and leader perceptions Percentage (Number of individuals)		
Equal attention	Same	Different
Teachers	50.0 (5)	50.0 (5)
Leaders	50.0 (6)	50.0 (6)
Both	50.0 (11)	50.0 (11)

Table 14 Parent perceptions of multigrade classes

Teacher and leader perceptions Percentage (Number of comments)			
Perceptions	Positive	Neutral	Negative
Teachers	6.3 (1)	25.0 (4)	68.8 (11)
Leaders	2.9 (1)	11.7 (4)	85.3 (29)
Both	4.0 (2)	16.0 (8)	80.0 (40)

Table 15 Reasons given for teacher perceptions of multigrade classes

Teacher and leader perceptions Percentage (Number of comments)			
Reasons	Teachers	Leaders	Both
Range of students*	44.0 (11)	50.0 (3)	45.2 (14)
Amount of work**	32.0 (8)	50.0 (3)	35.5 (11)
Student learning#	12.0 (3)	0.0 (0)	9.7 (3)
Social factors+	12.0 (3)	0.0 (0)	9.7 (3)

* Range of students: Complexities arising from range of students' abilities, achievement, maturity; insufficient time; level of difficulty

** Amount of work: Hard work; amount of planning and organisation

Student learning: Stimulation; extension; boredom

+ Social factors: Role modelling; moderation